

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
5 February 2004 (05.02.2004)

PCT

(10) International Publication Number
WO 2004/011393 A1

(51) International Patent Classification⁷: **C05B 9/00**,
C05F 3/00, C02F 1/52

(21) International Application Number:
PCT/CA2002/001187

(22) International Filing Date: 26 July 2002 (26.07.2002)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant and

(72) Inventor: **LAKSHMAN, Gurunathan**, [CA/CA];
222-111 Research Drive, Saskatoon, Saskatchewan S7N
3R2 (CA).

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK,
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

Published:

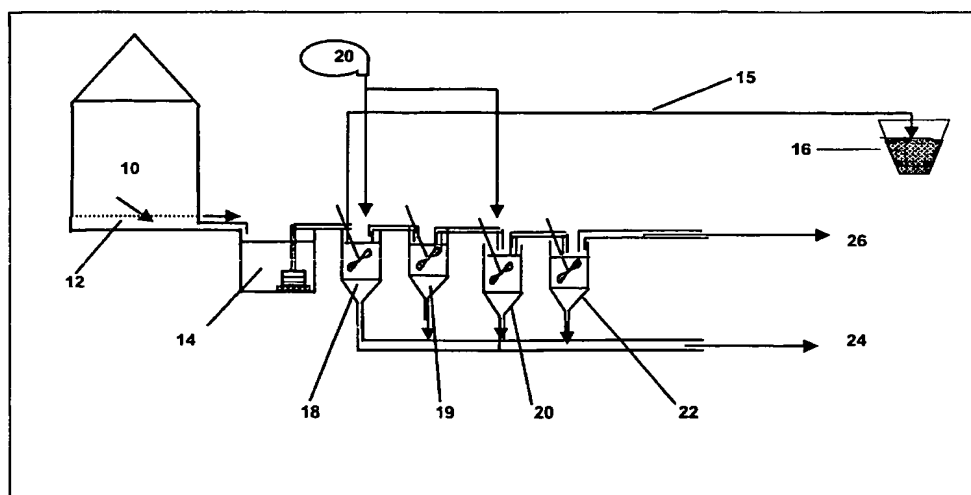
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(74) Agent: **ADE & COMPANY**; 1700-360 Main Street, Winnipeg, Manitoba R3C 3Z3 (CA).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

(54) Title: **HOG MANURE TREATMENT SYSTEM**



(57) Abstract: The invention relates to a method of treating manure such that odour from the manure is significantly reduced or eliminated and producing therefrom recyclable water, value-added biosolids and ammonia. Specifically, the manure is combined with lime at high pH. The material is mixed under negative pressure and the basic conditions cause ammonia to be evolved from the manure which is then drawn off and recovered. A coagulating agent is then added which further promotes floc formation within the manure. Following further mixing, flocs are separated from the liquid portion. A struvite-promoting chemical and a coagulant are then added to the liquid portion which causes further floc formation, and the flocs are again separated from the substantially clear liquid. It is of note that as a result of this process, the solids are highly hydrophobic and dry very quickly. It is of further note that solids isolated from either step can be combined and sold, for example, as fertilizer, as discussed below. The clear liquid can be used, for example, in barn washes or for horticultural watering.